Totalview Debugging on Pleiades

Category: Program Development Tools

DRAFT

This article is being reviewed for completeness and technical accuracy.

TotalView is an advanced debugger for complex and parallel codes. Its versions have been installed as modules. To find out what versions of totalview are available, use the 'module avail' command.

There are additional steps needed in order to start the TotalView GUI. You'll need to rely on the ForwardX11 feature of your ssh. First, you'll have to make sure that your sysadmin had turned on ForwardX11 when SSH was installed on your system or use the -X or -Y (if available) options of ssh to enable X11 forwarding for your SSH session.

For debugging on a back-end node, do:

- Compile your code with -g
- Start a PBS session. For example:

```
% qsub -I -V -lselect=2:ncpus=8,walltime=1:00:00
```

- Test the X11 forwarding with xlock

```
% xclock
```

- Load the totalview module

```
% module load apps/etnus/totalview.8.6.2-1
```

- Set the environment variable TOTALVIEW

```
% setenv TOTALVIEW `which totalview` (for csh users)
```
or
```
% export TOTALVIEW=`which totalview` (for bash users)
```

- Start TotalView debugging
    - For serial applications:

◊ Simply start totalview with your application as an argument

```
% totalview ./a.out
```

If your application requires arguments:

```
% totalview ./a.out -a app_arg_1 app_arg_2
```

♦ For MPI applications:

1. Make sure you load the appropriate modules, including the compiler, and mpi module. For example:

   For applications built with SGI's MPT, make sure that you have loaded the latest MPT module:

   ```
   % module load comp-intel/11.1.072
   % module load mpi-sgi/mpt.1.26
   ```

   For applications built with MVAPICH:

   ```
   % module load comp-intel/11.1.072
   % module load mpi-mvapich2/1.4.1/intel
   ```
2. Launch totalview by typing "totalview" all by itself. Once the totalview windows pop up, you will see four tabs in the "New Program" window: Program, Arguments, Standard I/O and Parallel.

3. Fill in the executable name in the "Program" box or use the Browse button to find the executable

4. Give any arguments to your executable by clicking on the "Arguments" tab and filling in what you need. If you need to redirect input from a file, do so by clicking the "Standard I/O" tab and filling in what you need.

5. In the "Parallel" tab, select the parallel system option MVAPICH2 or mpt_1.26 depending on which version of MPI you have compiled with.

6. Enter in the number of processes in the 'tasks' box; leave the 'nodes' field 0. For example, if you run your application with 2 nodes x 4 MPI processes/node = 8 processes in total, fill in 8 in the 'tasks' box and 0 in the 'node' box.

7. Then press "Go" to start. Note that it may initially dump you into the mpiexec assembler source which is not your own code.

8. Respond to the popup dialog box which says "Process xxx is a parallel job. Do you want to stop the job now?" Choose "No" if you just want to

run your application. Choose "Yes" if you want to set breakpoint in your source code or do other tasks before running.

More information about TotalView can be found at the Totalview online documentation website.

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